

## EVALUATION OF PPP PROJECTS IN INDIA: THE CASE OF POWER TRANSMISSION LINES

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### ABSTRACT

*In the Twelfth Five Year Plan (2012-2017), Indian government had set the ground for making investment in infrastructure, which is crucial to the growth and sustenance of Indian economy. To actualize this, the government has been methodically bringing out Public-Private-Partnership programs for development of various public utilities that contribute to the country's infrastructure. India has been a front runner in the implementation of PPP projects at the world level so far. However, issues like the sources of finance and funding, evaluation of PPP projects seem to be concern areas for the private players. In other words, there is no mechanism in place for appraising the projects. The long-term nature of PPP projects and the complexity involved in it make these projects unattractive for new private players. The aim of the paper is to decode one such area i.e. how to appraise a PPP capital investment, especially when multiple stakeholders are involved. The time-tested capital budgeting technique of appraising investment projects are employed. The authors have chosen a power transmission line which is being developed on PPP model. It is one of the most promising areas to scale up private investment. The results of the analysis present the project's internal rate of return at 12%, which is much above the company's hurdle rate computed. The project qualifies for selection from the financial angle. However, the soft aspects relating to the project like managerial expertise required etc. are not covered as a part of the study.*

**KEYWORDS:** PPP, Return on Investment (ROI), Capital Budgeting, Free Cash Flows, Internal Rate of Return & Weighted Average Cost of Capital

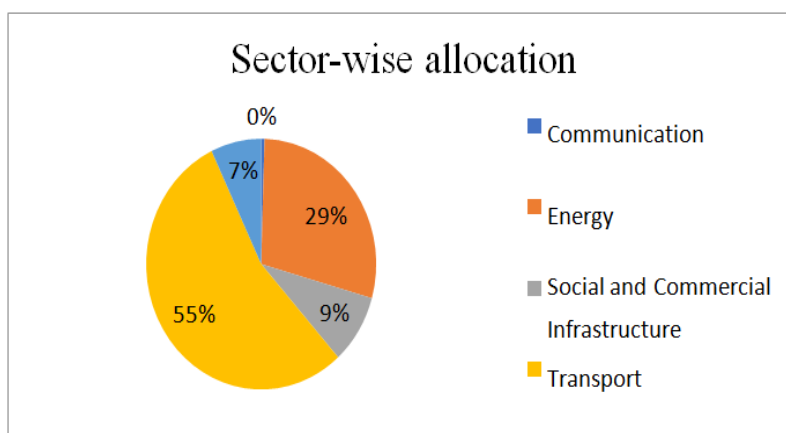
**Received:** Mar 01, 2019; **Accepted:** Mar 22, 2019; **Published:** Oct 30, 2019; **Paper Id.:** IJMPERDDEC201930

### 1. INTRODUCTION

The country records the highest number of Public and Private Partnerships (PPPs) in high-end infrastructure projects. The four major areas identified for PPP projects by the Indian government include Communication, Energy, Social and Commercial Infrastructure and Transport. A report by the World Bank suggests India as an ideal destination for PPP projects, with nearly 1500 projects in multiple stages of development. The Asia Infra scope Report 2018, a study by The Economist Intelligence Unit (EIU) ranks India at the 4<sup>th</sup> position and the State of Gujarat at the 5<sup>th</sup> position overall in terms of having a conducive climate for PPP projects<sup>6</sup>. The sector-wise distribution of PPP projects for the year 2019 is presented below.

PPPs have been instituted across sectors such as housing, railways, roads, aviation, power distribution, mining, school education, Information and Communication Technology (ICT) and health services. A successful PPP strategy holds promise for infrastructure creation if the financing piece is tied up. PPP projects are capital budgeting decisions that involve huge funding for the private partner. There is a need to take an informed decision, as it impacts a

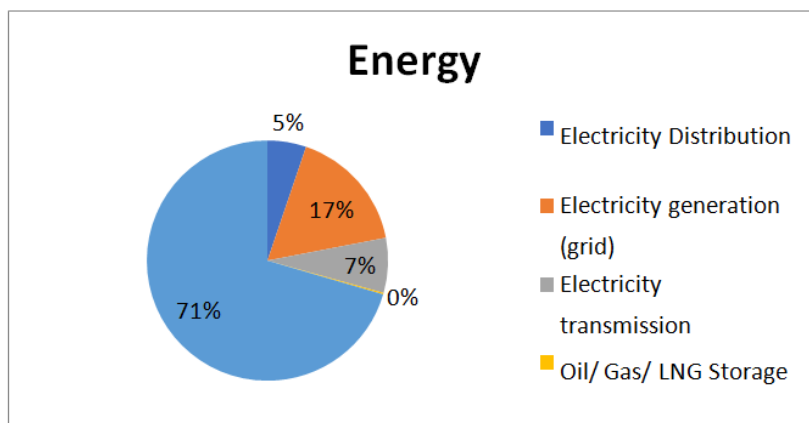
company's diversification push. The technique of screening of a project proposal involves determining a rate of Return on Investment (ROI). This internally determined rate is compared with the company's cost of capital for selection of the proposal. This paper aims to evaluate a certain PPP project by projecting future cash flows over the useful life of the project and computing the Internal Rate of Return of the project. We analyse all these for a power transmission line, which is being developed on PPP model. Power Transmission lines are a focal area for private investment, next only to power generation.



**Figure 1: Sector-wise PPP Projects in India**  
Source: pppindia.gov.in

### 1.1 Power Transmission Lines: Role of L & T IDPL

In the sector chosen for study, PPP is formed between the government (Central and State) and Larsen & Toubro Infrastructure Development Projects Limited (L & T IDPL). L & T IDPL is a subsidiary of Larsen & Toubro which has a proven track record for development of projects on PPP model. The parent company Larsen & Toubro enjoys the reputation of an established engineering and construction major present across a wide range of sectors and has gained the competency for successful execution of over the years. The Kudgi project involves an outlay of Rs.1,00,000crore, funded by a consortium of banks. The investment and development of this project is a major capital expenditure decision for the company. This facility will be operated jointly by Central Transmission Utility and Power Grid Corporation of India. This project once operational, will form a National Grid that will effortlessly combine five regional grids, so that there is transfer of power from surplus to deficit regions. Such is the significance of the project in the infrastructure development of the nation. The table below presents a break-up of projects that fall under the category of energy.



**Figure 2: Break-Up of Energy Projects**  
www.pppindia.gov.in

### 1.2 Understanding Public-Private-Partnerships

According to Murali & Rupal (2018)<sup>2</sup> who studied PPP in infrastructure, define the term ‘Public-Private-Partnership’ as an arrangement, where in, a government and a private entity jointly undertake the development of public activity”. The arrangement involves at least one government and a group of private entities who join together to build long-lived capital intensive projects, especially in infrastructure. The Delhi Metro is a clear case of a well implemented PPP model.

### 1.3 Objective of the Study

The study aims to understand the financial considerations that need to be screened before kicking off the PPP project. Therefore, the objectives of the study cover the metrics that are computed for making the financial projections over the life of the project.

- To compute Free Cash Flows (FCF) over the life of the project using the Discounted Cash Flow Model.
- To calculate the overall Weighted Average Cost of Capital (WACC)
- To compute the project Internal Rate of Return (IRR) and make the decision criterion.

## 2. LITERATURE REVIEW

Capital budgeting is the popular investment appraisal technique, to find out whether a long-term investment in tangible asset is worth the deployment of funds through a certain capital structure. Traditionally, capital budgeting techniques are highly used by private sector companies for screening their project proposals. It is a less tested as a tool to appraise PPP projects. A comprehensive study on Capital budgeting decisions by Shveta Singh, P.K.Jain, Surendra S. Yadav, (2012)<sup>4</sup> about the capital expenditure (CAPEX) practices of 166 firms from 2001-2011 suggests a general trend for assessing mainly private sector investments. Another work by T S, Ramakrishnan (2014)<sup>5</sup>, covers the financing issues associated with PPP projects. There is no evidence of choice of CAPEX framework for evaluating PPP projects by private partners.

## 3. METHODOLOGY OF THE STUDY

Being a highly capital-intensive project, it is imperative to study the financial projections over the life of the project precisely. We employ the widely used Discounted Cash Flow Model to arrive at the Free Cash Flows. The free cash flows are computed over the life of the project which is 35 years (2016-2051). The inflows computed are compared with the project outflow of Rs. 10,00,00,00,000 and Internal Rate of Return (IRR) is calculated. The excel function has been used to compute IRR. This is compared with the company’s hurdle rate or weighted average cost of capital. The standard Capital Asset Pricing Model (CAPM) is employed to estimate the cost of equity. While computing the cost of equity for listed companies, risk is quantified as the risk attached to a portfolio or systematic risk. The beta (in the Capital Asset Pricing Model) is estimated using historical stock prices. In the absence of historical stock price information for private limited companies, we estimate the bottom-up betas which have the similar utility that they have for public limited companies. Thus, the beta of L & T IDPL an unlisted firm, is estimated by computing the average betas of peer companies like Kalpataru Power Transmission Ltd, Power Grid Corporation of India and Reliance Power Ltd. Secondary data consisting of Financial Statements of the and stock prices have been used for making necessary calculations.

#### 4. FINANCIAL PROJECTIONS

The cash outflow of the project which constitutes the capital investment along with the interest is stated below.

**Table 1: Cost of the Project**

Cost of the Project	Rs.10,00,00,00,000
Interest during Construction	Rs.78,77,59,067
Total Cost	Rs.10,78,77,59,067

The two sources of finance for the project are equity and debt in the following proportion.

**Table 2: Sources of Finance**

Equity	3,27,62,27,720
Debt	7,51,15,31,347
Opening Debt	
Closing Debt	
Interest	10% 78,77,59,067

**Table 3: Computation of Free Cash Flows**

Particulars		Amount
<b>Revenue</b>	Operating Revenue	68,69,60,47,500
<b>Total Revenue</b>		68,69,60,47,500
<b>Expenses</b>	Operation And Maintenance	10,86,09,32,099
	Salaries And Wages	2,71,52,33,025
	Administration And Other Expenses	4,52,63,88,375
	Finance Cost ( <b>Interest</b> )	5,63,83,43,217
	Depreciation	10,78,77,59,067
<b>Total Expenses</b>		<b>34,52,86,55,783</b>
<b>Profit/Loss Before Tax</b>		<b>34,16,73,91,717</b>
<b>Tax</b>	29%	7,24,07,11,502
<b>Subcharges</b>	7%	50,60,77,718
<b>Edu. Cess</b>	3%	1,51,64,960
<b>Profit/Loss After Tax</b>		<b>26,40,54,37,537</b>
Opening Debt		-
Repayment		7,51,15,31,347
Closing Debt		-
Interest	10%	<b>5,63,83,43,217</b>
Depreciation		10,78,77,59,067
Free Cash Flow To The Firm		Amount
<b>Capital Expenditures</b>		(10,78,77,59,067)
<b>Operating Revenue</b>		68,69,60,47,500
<b>O&amp;M Expenses</b>		(10,86,09,32,099)
<b>Salaries and Wages</b>		(2,71,52,33,025)
<b>Administration and Other Expenses</b>		(4,52,63,88,375)
<b>Tax</b>		(7,76,19,54,180)
<b>Free Cash Flow To The Firm</b>		<b>32,04,37,80,754</b>
<b>Project IRR</b>	<b>12%</b>	

**Table 4: Beta of Peer Companies**

Peer Companies	Equity beta	Market capitalization	Net debt	Enterprise Value	Net debt/ Market Capitalization	Net debt/ Enterprise value	Tax rate	Unlevered beta	Relevered beta
Kalpataru Power Transmission limited	-0.07	11601651600	5362600000	16964251600	0.46	0.32	33.3%	-0.05	-0.13
Power Grid Corporation of India	0.32	502093676250	795397500000	1297491176250	1.58	0.61	33.3%	0.16	0.40
Reliance Power Limited	0.84	203792403900	245172100000	448964503900	1.20	0.55	33.3%	0.47	1.21
<b>Average</b>	<b>0.37</b>							<b>0.19</b>	<b>0.49</b>

**Table 5: Output of Cost of Equity**

Particulars	%
Risk free rate	8.19
Beta	0.49
Equity market risk premium	7.97
Cost of equity	12.12

**Table 6: Capital Mix**

Particulars	Amount
Equity (30%)	3276227720
Debt (70%)	7511531347
Total (100%)	10787759067

**Table 7: Weighted Average Cost of Capital**

Particulars	%
Cost of Equity	12.12%
Cost of Debt	10.00%
Tax	31.24%
WACC	8.47%

## 5. RESULTS

The results of the analysis indicate that the project fetches an IRR of 12%, computed by comparing the cash outlay with the free cash flows for 35 years. The weighted average cost of capital (WACC) from the finance mix of 30% equity and 70% debt is 8.47%, which serves as the hurdle. As the IRR is much above the WACC, it is desirable to go ahead with the investment proposal of power transmission lines for L & T IDPL.

## 5. CONCLUSIONS

In the last few years, governments of developing nations have sought to use the PPP as a way of attracting private investment to boost infrastructure development. Interestingly, PPPs have gained interest among new groups of investors like pension funds and sovereign wealth funds. This paper studies the applicability of the indispensable appraising technique IRR, for a new kind of PPP investment in power transmission lines.

The screening of any capital investment entails the study of both the financial and non-financial aspects. The study covers only the financial appraisal technique required for qualifying an investment and presents the results. Other

aspects relating to development of the project, social and political angle, the risks associated with the project and managerial capabilities required for a successful bidder are not covered as a part of the study. A full-fledged study covering both the soft and hard aspects of capital investment can be undertaken in order to get the whole picture of a PPP project.

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